

WHAT IS CLAIMED IS:

1. A method of retransmitting uplink packet data from a user equipment (UE) to Node Bs, the UE being placed in a handover region commonly covered by the
5 Node Bs and transmitting data to the Node Bs on an enhanced uplink dedicated transport channel (EUDCH) and a radio network controller (RNC) controls the Node Bs, the method comprising the steps of:
transmitting from the Node Bs to the UE first response fields indicating whether the Node Bs have received good packet data or bad packet data, and second
10 response fields indicating whether the RNC has received good packet data or bad packet data; and
detecting the first and second response fields and determining retransmission of the uplink packet data according to the values of the response fields in the UE.
- 15 2. The method of claim 1, wherein the first and second response fields transmitted from each of the Node Bs are successive or apart from each other, and are transmitted along with a downlink information field on one channel.
3. The method of claim 2, wherein the first and second response fields
20 are transmitted on a dedicated transport channel supporting the EUDCH.
4. The method of claim 3, wherein the first and second response fields are transmitted in a field of a downlink dedicated physical data channel.
- 25 5. The method of claim 3, wherein the first and second response fields are transmitted in a field of a high-speed physical downlink shared channel.
6. An uplink data retransmitting system for a user equipment (UE) in a handover region in a (CDMA) Code Division Multiple Access communication system
30 having a serving Node B, the UE within the coverage area of the Node B, a Node B adjacent to the serving Node B, and a radio network controller (RNC) connected to the Node B and the adjacent Node B, the UE transmitting uplink packet data to the serving

Node B and the adjacent Node B on an enhanced uplink dedicated transport channel (EUDCH) and the handover region covered commonly by the serving Node B and the adjacent Node B, the system comprising:

the Node B for receiving the uplink packet data from the UE in the soft
 5 handover region, deciding the value of a first response field indicating normal or erroneous reception of the uplink packet data, and transmitting the first response field and a second response field received from the RNC to the UE;

the RNC for deciding the value of the second response field indicating normal or erroneous reception of the uplink packet data and transmitting the second response
 10 field to the serving Node B and the adjacent Node B; and

the UE for receiving the first and second response fields from the serving Node B and the adjacent Node B and determining retransmission of the uplink packet data according to the values of the first and second response fields.

15 7. The system of claim 6, wherein the first and second response fields transmitted from each of the serving Node B and the adjacent Node B are successive or apart from each other, and are transmitted along with a downlink information field on one channel.

20 8. The system of claim 7, wherein the first and second response fields are transmitted on a dedicated transport channel supporting the EUDCH.

 9. The system of claim 8, wherein the first and second response fields are transmitted in a field of a downlink dedicated physical data channel.
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 10. The system of claim 8, wherein the first and second response fields are transmitted in a field of a high-speed physical downlink shared channel.

 11. A method of retransmitting uplink packet data to a plurality of active
 30 Node Bs in a user equipment (UE) in a handover region in a mobile communication system supporting an enhanced uplink dedicated transport channel (EUDCH) service, the method comprising the steps of:

receiving from the active Node Bs first response fields indicating normal or erroneous reception of the uplink packet data in the active Node Bs and second response fields indicating normal or erroneous reception of the uplink packet data in a radio network controller (RNC) connected to the active Node Bs;

5 computing the reliability of the first response fields and comparing the reliability with a predetermined threshold; and

transmitting a next uplink packet data if the reliability is greater than the threshold and determining retransmission of the uplink packet data depending on a second response field received from the RNC to the UE if the reliability is less than or
10 equal to the threshold.

12. The method of claim 11, wherein the reliability is computed according to weighting factors assigned to the active Node Bs.

15 13. The method of claim 11, wherein the reliability is computed according to a ratio of different values of the first response fields.

14. The method of claim 11, wherein the UE sets the threshold so that the uplink packet data is retransmitted according to the value of the second response fields
20 irrespective of the reliability of the first response fields.

15. A method of transmitting a response field indicating normal or erroneous reception of uplink packet data received from a user equipment (UE) in a handover region in each of Node Bs that commonly cover the UE in a mobile
25 communication system supporting an enhanced uplink dedicated transport channel (EUDCH) service, the each of Node Bs the response field, the method comprising the steps of:

determining whether the uplink packet data is initially transmitted or retransmitted;

30 checking errors in the uplink packet data if the uplink packet data is initially transmitted, and checking errors after combining the uplink packet data with previous uplink packet data if the uplink packet data is retransmitted; and

transmitting the uplink packet data and an error check result to a radio network controller (RNC) connected to the Node Bs and deciding the value of the response field and transmitting the decided response field to UE.

5 16. A method of transmitting a response field indicating normal or erroneous reception of uplink packet data transmitted from a user equipment (UE) in a handover region in a radio network controller (RNC) connected to Node Bs that commonly cover the UE in a mobile communication system supporting an enhanced uplink dedicated transport channel (EUDCH) service, the RNC transmitting the
10 response field, the method comprising the steps of:

receiving the uplink packet data from the Node Bs, determining whether good uplink packet data is among the received packet data, and checking for errors after combining the received packet data if there is no good uplink packet data;

deciding the value of the response field according to the error check result and
15 transmitting the response field to the Node Bs; and

transmitting the uplink packet data to a higher-layer network after correcting the errors of the uplink packet data.

17. A packet data transmitting apparatus for transmitting uplink packet
20 data to a plurality of active Node Bs in a user equipment (UE) in a handover region in a mobile communication system supporting an enhanced uplink dedicated transport channel (EUDCH) service, comprising:

a Node B response field detector for receiving downlink channels supporting the EUDCH from the active Node Bs and detecting first response fields indicating
25 normal or erroneous reception of the uplink packet data in the active Node Bs;

an Radio Network Controller (RNC) response field detector for receiving the downlink channels and detecting second response fields indicating normal or erroneous reception of the uplink packet data in an RNC connected to the active Node Bs; and

a controller for deciding whether to retransmit the uplink packet data according
30 to the first and second response fields, selecting uplink packet data to be retransmitted, and controlling a memory to transmit the selected uplink packet data.

18. A transmitting apparatus for transmitting a response field indicating normal or erroneous reception of uplink packet data from a user equipment (UE) in a handover region in each of active Node Bs, the UE retransmitting the uplink packet data according to the value of the response field, in a mobile communication system supporting an enhanced uplink dedicated transport channel (EUDCH) service, comprising:

a memory controller for applying to a memory an uplink control signal indicating whether the uplink packet data is initially transmitted or retransmitted and controlling the memory to soft-combine the uplink packet data with previous uplink packet data if the uplink packet data is retransmitted;

the memory for performing the soft combining under the control of the memory controller; and

an error detector for checking errors in the uplink packet data and generating the response field according to the error check result.

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19. A transmitting apparatus for transmitting a response field indicating normal or erroneous reception of uplink packet data transmitted from a user equipment (UE) in a handover region in a radio network controller (RNC) connected to active Node Bs that commonly cover the UE in the handover region, the UE retransmitting the uplink packet data according to the value of the response field, in a mobile communication system supporting an enhanced uplink dedicated transport channel (EUDCH) service, comprising:

a Node B response field detector for detecting response fields indicating normal or erroneous reception of the uplink packet data in the Node Bs;

a combiner for combining the uplink packet data received from the Node Bs and checking errors in the combined uplink packet data; and

an error detector for checking errors in the uplink packet data and generating the response field according to the error check result.

20. The apparatus of claim 19, wherein the combiner performs space diversity-combining on the received uplink packet data.